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Accumulation, Coordination, and the Limits of Emulation: A Systematic Review of Singapore's Economic Transformation and Its Transferability to Developing Southeast Asia

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Abstract

Singapore is routinely invoked as a model for developing economies in Southeast Asia, yet the evidence behind specific claims about its transformation is rarely examined as a body. This PRISMA 2020-guided systematic review synthesises research on the mechanisms behind Singapore's post-1965 transformation, the strength of the evidence, and the conditions that constrain transfer. Searches of SciSpace and Google Scholar yielded 1,185 unique records, of which 1,000 were screened using large language model-assisted scoring against eight criteria. Because the additive scoring rule excluded several seminal studies, all records within 0.5 points of the threshold were re-screened under a pre-specified domain-specific rule, and growth-accounting studies were added through citation searching. The final sample comprises 50 studies published between 1980 and 2024, graded into three evidence tiers. Growth up to the late 1980s was predominantly accumulation-driven under conventional growth accounting, with total factor productivity contributing little or nothing, although the size of the shortfall depends on how market imperfections are measured. A capable, coordinating state mobilised saving, foreign direct investment, and skills at exceptional speed, but evaluations show that its interventions were not uniformly successful. Foreign direct investment drove rapid structural change while generating limited spillovers to local firms, and innovation inputs, largely foreign-owned, have grown faster than measurable returns. Documented costs include dependence on foreign labour, weak local entrepreneurship, and distributional strains. Transferability remains the weakest strand of evidence: coordination capabilities, notably the alignment of skills policy with investment, appear more portable than instruments such as compulsory saving or frontier-research targeting. For the Philippines and other ASEAN economies, the evidence supports adaptation sequenced to state capacity rather than replication. The re-screen left the direction of every conclusion unchanged while strengthening most of them.

Keywords: *Singapore; developmental state; total factor productivity; industrial policy; human capital; policy transferability; systematic review*

1. Introduction

Few development trajectories are invoked as often in Asian policy debate as Singapore's. Within roughly one political generation, the city-state moved from an entrepôt economy whose early industrial advantage lay in comparatively cheap labour to an advanced economy competing on technology, skills, and capital (Edwards, 1992). Between 1966 and 1990 its output expanded at about 8.5 percent a year and per capita income at about 6.6 percent (Tan & Phang, 2005), and real GDP per capita grew at an average of roughly 6.2 percent annually over three decades (Kasa, 1994). These outcomes have made Singapore a standing reference point in regional discussions of how middle-

income economies might sustain growth, upgrade their industrial base, and build public institutions capable of directing that process (Abeyasinghe, 2015; Saner et al., 2014). Regional convergence evidence adds weight to that interest: catch-up growth across Asia, including within ASEAN, appears to be real but uneven, which leaves open the question of what sustains it in lagging economies (Balingit et al., 2026). Singapore has also become an active exporter of its own administrative know-how, for example through executive development programmes for public officials from neighbouring economies (Lee et al., 2025).

The popularity of the "Singapore model" sits uneasily with the depth of disagreement about what that model actually was. One line of research, associated most closely with Young's (1992, 1995) growth-accounting work and popularised by Krugman (1994), holds that Singapore's expansion was driven overwhelmingly by the mobilisation of capital and labour rather than by gains in the efficiency with which those inputs were used. A second line treats Singapore as a paradigmatic developmental state whose distinctive asset was the capacity to plan, coordinate, and implement policy with unusual consistency (Huff, 1999; Pereira, 2008). A third, more recent line accepts that industrial policy contributed to genuine development but argues that the same state-heavy approach constrained local entrepreneurship and the economy's adaptive capacity (Cheang, 2024). Such costs also need to be read against wider structural conditions in the region: formal business entry across ASEAN is associated mainly with development level, banking-sector credit depth, and population concentration (R. G. Atento, 2026), and in the Philippines with tertiary enrollment (A. G. Atento, Teodosio, et al., 2026). These positions are not only ideological. They turn on measurement choices in growth accounting, on how the post-1965 period is divided into phases, and on what counterfactual is assumed when Singapore's performance is evaluated.

The disagreement matters most for the economies that are most often urged to learn from Singapore. Members of the Association of Southeast Asian Nations (ASEAN) differ sharply in population, territorial structure, resource endowments, political systems, and administrative capacity, and they cannot be treated as a single audience for a single set of lessons. Comparative studies of the region document this heterogeneity in institutional quality and its conditioning of foreign investment (R. G. Atento, Espelita, et al., 2026), in the divergent development of capital markets (Chen et al., 2026), in the conversion of growth into human-development gains (Quinto & Atento, 2025), and in educational exclusion and teacher capacity (Dela Cruz & Atento, 2026). The Philippines illustrates the problem. It shares an English-language advantage and an island geography with Singapore, but it is far larger, archipelagic, and governed through a more decentralised and pluralistic political system, and comparative governance, corruption, and public-trust indicators show wide gaps between the two (R. G. Atento, 2025; Quah, 2010). Philippine evidence also cautions against assuming that instruments associated with Singapore would operate in the same way. Aggregate FDI inflows have shown no statistical association with Philippine manufacturing growth or manufacturing share once macroeconomic dynamics and major shocks are controlled (Refozar et al., 2026); the country's investment-promotion components have been characterised as present but not coherently aligned (R. G. Atento & Espelita, 2026); and remittance inflows have been associated with higher household consumption and lower fixed capital formation rather than with productive investment (R. G. Atento, Feng, et al., 2026). The misalignment between Philippine educational qualifications and competency expectations has likewise been traced to fragmented coordination among education, training, and licensure agencies (Quinto et al., 2026), a coordination problem that bears directly on Singapore-inspired proposals for aligning skills with investment. Malaysia, from which Singapore separated in 1965, offers a closer comparator in some respects but followed different education and language policies with different results (Maynes, 2011). Lesson-drawing that does not attend to such differences risks transferring instruments whose effectiveness depended on conditions that are absent in the borrowing economy.

A systematic review is well suited to this problem for three reasons. First, the relevant literature is dispersed across economics, political science, public administration, innovation studies, and education, and it uses methods ranging from growth accounting and time-series econometrics to qualitative policy analysis and process tracing. Narrative reviews of such a literature tend to privilege the work most familiar to the reviewer. Second, much of what is written about Singapore's development is descriptive, celebratory, or advocacy-oriented, so a transparent screening procedure is needed to separate analytical claims from promotional ones. Third, a review that grades the strength of evidence for each mechanism allows policy readers to distinguish what is established from what is plausible but unproven. Within the records retrieved for this study, no prior review applied a reproducible, PRISMA-guided protocol to the mechanisms of Singapore's transformation and their transferability.

The review also has a methodological motivation. Systematic reviews in economics and policy increasingly rely on artificial intelligence (AI) platforms for searching, screening, and extraction. These tools can widen coverage and reduce workload, but their behaviour is rarely reported in enough detail for readers to judge how they shaped the

evidence base. The concern is sharpened by the character of machine-learning inference itself, which derives patterns from data through procedures that users cannot fully inspect (R. G. Atento & Quinto, 2026). This review used large language model (LLM)-assisted screening and extraction, and it reports the consequences of that choice openly, including the limited availability of full texts, deviations from protocol, the exclusion of several seminal studies by the scoring threshold, and a sensitivity re-screen that recovered them.

Against this background, the paper sets out to identify the mechanisms that the research literature associates with Singapore's economic transformation since 1965, to appraise how strong the evidence for each mechanism is, and to examine how the literature separates growth arising from capital and labour accumulation from growth arising from productivity improvement. It further seeks to map the limitations, trade-offs, and competing explanations identified by critical studies, and to assess which mechanisms appear potentially transferable and under what institutional, economic, and historical conditions, with particular attention to the Philippines and to the structural diversity of developing ASEAN economies. For readers of *Asian Financial Economics and Policy*, the review speaks to policy economists, planners, and financial regulators who are asked to evaluate Singapore-inspired proposals, and to researchers who need a transparent map of where the evidence is thick and where it is thin.

The remainder of the paper is organised as follows. Section 2 sets out the conceptual debates that frame the review and states the research questions. Section 3 describes the review methodology, including the screening procedure, the sensitivity re-screen, and all deviations from protocol. Section 4 reports the results of study selection and the evidence synthesis for each research question. Section 5 discusses the findings, their implications for policy in differentiated ASEAN contexts, and the methodological lessons for AI-assisted reviews. Section 6 concludes with measured recommendations and a research agenda.

2. Conceptual Background

This section frames the debates that the review addresses. Some of the studies cited here are part of the synthesis in Section 4 (Huff, 1999; Kim & Lau, 1994; Young, 1992, 1995). The others were identified by the same searches but fell below both the screening threshold and the re-screen band described in Section 3; they are used only for framing, and their status is reported in Table 5.

2.1 Accumulation and Productivity in Growth Accounting

The most influential empirical challenge to the Singapore success narrative came from growth accounting. Young (1992) compared Hong Kong and Singapore as a paired case: two city economies with similar colonial histories and economic structures but markedly different policy regimes. He found that TFP growth contributed substantially to Hong Kong's growth but close to nothing to Singapore's, despite Singapore's much faster accumulation of physical and human capital and its more rapid movement into technologically advanced sectors. Young (1995) extended the analysis to Hong Kong, Singapore, South Korea, and Taiwan, and Kim and Lau (1994) reached a similar conclusion using a different method. These studies are part of the synthesis, and their results are reported in Section 4.6.

Krugman (1994) brought this argument to a policy audience, contending that growth driven primarily by input mobilisation is subject to diminishing returns and therefore cannot be extrapolated indefinitely. The accumulation thesis has itself been qualified. Veloso et al. (2004) re-estimated TFP for a large cross-country sample under a common methodology and argued that the period Young studied was one of unusually low TFP growth and unusually high factor accumulation worldwide; measured against that benchmark, the East Asian economies' productivity performance was strong in relative terms even if unremarkable in absolute terms. The debate therefore depends on the benchmark chosen, on how capital and labour quality are measured, and on the period examined. These measurement issues recur in the evidence synthesised in Section 4.6.

2.2 The Developmental State and Institutional Capacity

A second body of work locates Singapore's distinctiveness in the state rather than in the growth accounts. Huff (1999) argued that the most instructive lessons from Singapore stem from government's central role in the economy, while cautioning that low TFP growth and the particular form of state-directed growth leave open whether an economy able to sustain high living standards over the long term had been built. Pereira (2008) asked why Singapore's developmental state, unlike its East Asian counterparts, showed no sign of retreat, and attributed its resilience to the continued weakness of a domestic capitalist class, collaboration between the state, transnational capital, and government-linked corporations, and the incorporation of labour into state-led arrangements.

Public administration scholarship adds an institutional dimension. Quah (2013) attributed Singapore's governance performance to four policies of the governing People's Action Party: civil service reform, anti-corruption measures, decentralisation of the Public Service Commission, and competitive public-sector salaries. He also argued that this experience would be difficult to transfer because of Singapore's unusual circumstances and favourable policy context. These accounts treat state capacity as a cause of rapid transformation, but they also imply that the relevant capacity was built under historically specific political conditions.

2.3 Policy Transfer and the Limits of Emulation

The question of whether Singapore's experience can inform policy elsewhere has been posed in several forms. Abeysinghe (2015), drawing on the experience of developing economies caught in cycles of stop-start growth, argued that non-economic factors mattered more than economic ones for Singapore's take-off. Saner et al. (2014) proposed a human-capital-focused development strategy for middle-income economies modelled on Singapore's alignment of skills and economic policy, while a respondent in the same debate questioned whether the conditions behind Singapore's success could be exported. Lee et al. (2025), studying Singapore's executive development programmes for Cambodian and Thai officials between 2014 and 2023, found that transfer depended on structural adaptation to local contexts and on a change in mindset among participants rather than on the adoption of Singaporean instruments as such.

For this review, a working distinction follows from these contributions. Policy instruments, such as a mandatory provident fund, a specific investment incentive, or a sectoral research programme, are bound to the fiscal, administrative, and political conditions in which they operate. Institutional capabilities, such as the ability to coordinate education and industrial policy or to maintain policy consistency across electoral cycles, are more general, although they are also harder to build. The review uses this distinction when interpreting the transferability evidence in Sections 4.8 and 5.2.

2.4 Research Questions

The review addresses one overarching question: what mechanisms does the research literature identify as contributing to Singapore's economic transformation, how strong is the supporting evidence, and under what conditions might these mechanisms inform development policy in other economies? Six specific questions operationalise it. RQ1 asks what evidence connects Singapore's transformation with state capacity, institutional quality, policy coordination, and implementation. RQ2 asks what roles industrial policy, foreign direct investment (FDI), trade integration, infrastructure, and financial development have played. RQ3 asks how education, workforce development, technological upgrading, and innovation have contributed. RQ4 asks how the literature distinguishes growth arising from capital and labour accumulation from growth arising from productivity improvement. RQ5 asks what competing explanations, limitations, distributional outcomes, and trade-offs the literature identifies. RQ6 asks which policies or mechanisms appear potentially transferable, and what institutional, economic, and historical conditions constrain their application elsewhere, including in the Philippines.

3. Methodology

3.1 Review Design and Reporting Standard

The study is a systematic literature review with narrative synthesis. Reporting follows the PRISMA 2020 statement (Page et al., 2021), and the synthesis follows the principles of the Synthesis Without Meta-analysis (SWiM) guideline (Campbell et al., 2020), which is appropriate where included studies are too heterogeneous in design and outcome for statistical pooling. Structured thematic reviews have also been applied to related questions in Asian policy economics, such as the links between institutional quality and FDI attraction and between digital connectivity and financial inclusion (A. G. Atento, R. G. Atento, et al., 2026; R. G. Atento, Espelita, et al., 2026). Because full texts could be retrieved for only a minority of included studies (Section 3.5), extraction for most studies rests on abstract-level evidence, and the review's conclusions are graded accordingly. The protocol was specified in advance in a research-question and screening-criteria document but was not registered in a public registry.

3.2 Information Sources and Search Strategy

Searches were conducted in October 2026 across four platforms: SciSpace Deep Search, SciSpace Full-Text Search, Google Scholar, and SciSpace Library Search. The search specification also listed arXiv, but no arXiv records

were exported, and PubMed was disabled as irrelevant to the topic. No publication-date restriction was applied, so coverage extends from each database's inception to the search date. The language of publication was restricted to English.

Two complementary query formats were used. For the SciSpace platforms, five natural-language queries were written to correspond to RQ1 to RQ5; for example, the query for RQ4 asked how the literature distinguishes growth from capital and labour accumulation from productivity improvement in Singapore's development. SciSpace Deep Search was run 29 times, including repeated executions and reformulations that added comparative or mechanism-specific terms. For Google Scholar, five Boolean strings combined the term Singapore with blocks of mechanism terms (for example, "total factor productivity" OR TFP OR "capital accumulation" OR "growth accounting") and outcome terms (for example, "economic growth" OR development). The full query set is reported in Appendix A. RQ6 was addressed through the fifth query in each format, which combined development-model, transferability, distributional, and constraint terms.

3.3 Eligibility Criteria

Eight pre-specified criteria governed eligibility (Table 1). Six were inclusion criteria, each corresponding to a research domain, and two were exclusion criteria. A study was not required to satisfy every inclusion criterion; rather, the criteria were jointly scored, and studies were required to show substantive engagement with the mechanisms of Singapore's transformation. Eligible publication types were peer-reviewed journal articles, scholarly books and chapters, and working papers from credible research institutions such as the World Bank, central banks, and university research centres. Government promotional material, newspaper and popular-press articles, and conference abstracts without full papers were ineligible. The protocol also listed dissertations and theses as ineligible, on grounds of access; this rule was not encoded in the automated screening criteria, and it was amended during the review (Section 3.6).

Table 1. Pre-specified eligibility criteria

Code	Type	Criterion	Operational description
IC1	Inclusion	Singapore transformation focus	Analyses Singapore's development, structural change, or growth trajectory after 1965, including outcomes such as real GDP per capita, labour productivity, TFP, or sectoral upgrading.
IC2	Inclusion	Institutional and policy mechanisms	Evaluates drivers such as state capacity, institutional quality, industrial policy, FDI, trade integration, or policy coordination and implementation.
IC3	Inclusion	Human capital and innovation	Examines the contribution of education, workforce development, technological upgrading, innovation systems, or R&D.
IC4	Inclusion	Growth-source analysis	Provides analytical evidence distinguishing growth from capital and labour accumulation from growth from productivity or efficiency gains.
IC5	Inclusion	Transferability and constraints	Discusses the historical, geographical, institutional, or economic conditions under which Singapore's mechanisms might apply elsewhere, or constraints on transfer.
IC6	Inclusion	Critical and distributional analysis	Identifies limitations, trade-offs, distributional outcomes, or competing explanations beyond official accounts.
EC1	Exclusion	Descriptive or promotional content	Purely descriptive, promotional, or opinion-based work without an analytical framework or empirical evidence on mechanisms.
EC2	Exclusion	Irrelevant geographic or thematic scope	Singapore appears only as a minor data point in a large-N study, or the topic is unrelated to economic development.

Note. Studies were not required to meet every inclusion criterion. Criterion ratings were aggregated into a 0–5 score; thresholds were 4.0 at title/abstract screening and 4.5 at full-text assessment. Source: Review protocol (screening criteria file, October 2026).

3.4 Screening Procedure

De-duplication was performed on normalised titles across all exported search files. Unique records were then screened at title and abstract level by the SciSpace platform's LLM-assisted screening function. For each record, the system rated every one of the eight criteria as met, partially met, or not met, with a short written justification, and combined these ratings into an aggregate score on a 0 to 5 scale. Records scoring 4.0 or higher advanced to full-text assessment, where a stricter threshold of 4.5 applied. The platform exported 1,000 unique records for screening; the remaining unique records were not passed to the screening stage, and the export does not document the rule by which the 1,000 were selected.

To make the exclusion reasons auditable, the criterion-level ratings in the exported screening file were reclassified into three hierarchical and mutually exclusive categories. Records that failed the Singapore-focus criterion (IC1) or triggered the geographic and thematic exclusion (EC2) were classified as outside scope. Of the remainder, records that triggered the descriptive or promotional exclusion (EC1) were classified as descriptive. All other excluded records were classified as Singapore-relevant but insufficiently engaged with the review's mechanisms, meaning that they addressed Singapore's economy but did not reach the aggregate threshold across the mechanism criteria.

3.5 Full-Text Retrieval, Verification, and Deviations from Protocol

Full texts could be retrieved through the platform for 2 of the 12 records that passed title and abstract screening: Tan and Phang (2005), which scored 4.56 at full-text assessment, and Kasa (1994), which scored 4.69. For the remaining ten records, no PDF was available, and the platform retained them on the strength of their title and abstract scores. This review preserves that decision but treats these records as abstract-level evidence. The authors subsequently obtained the open-access full text of Cheang (2024), confirmed its eligibility against the eight criteria, and re-extracted its data from the full text. For Koh and Wong (2005), which had no abstract in the export, the authors retrieved the published abstract and confirmed eligibility on that basis.

All 12 records were verified against their bibliographic metadata and available text, and one was excluded. The metadata attached to DOI 10.2307/2054078 describe an article titled "The British settlement of Penang" in the *Journal of Asian Studies* (1975), whereas the text screened under that identifier is a review of a monograph on Singapore's industrialisation. Because the record could not be reconciled with the content, and because the content is a book review rather than an analytical study, it was excluded under EC1 and the publication-type rule. As noted in Section 3.4, 185 unique records identified by the searches were not passed to screening by the platform.

3.6 Sensitivity Re-screening and Citation Searching

The additive scoring rule rewarded breadth across the six inclusion domains rather than depth in any one, and an inspection of the excluded records showed that several studies central to the review's questions had fallen just below the 4.0 threshold. To test the sensitivity of the evidence base to this rule, all 77 records scoring between 3.50 and 3.99 were re-screened against a domain-specific rule written before the re-screen began. The 0.5-point band was chosen because records in it had failed the threshold by a narrow margin: all but one were rated as fully meeting the Singapore-focus criterion, and all met at least one mechanism criterion in full. Under the domain-specific rule, a record was included if it met five conditions: (R1) Singapore's economy after 1965 is the primary subject, or Singapore-specific findings are reported within a comparison of a small number of economies; (R2) it is a peer-reviewed journal article or full conference paper, a scholarly book or chapter, a working paper of an established research institution, or a thesis held in a university repository; (R3) it offers analytical content, whether quantitative estimation or qualitative or comparative analysis, rather than a descriptive overview, commentary, speech, introduction, or first-person policy account; (R4) it engages substantively with at least one of the review's six domains; and (R5) it can be assessed from an available abstract that reports findings, or from the full text. Publications not in English remained ineligible.

Two protocol amendments followed from this rule. First, theses were made eligible. The protocol had excluded them because of access limitations, but the theses identified here are held in open university repositories, and the amendment also resolves the earlier inconsistency created by the platform's inclusion of Maynes (2011). Second, the authors retrieved published abstracts for records that lacked one in the export where a publisher or repository record was available.

Backward citation searching was then applied to the reference lists of the included full-text studies (Cheang, 2024; Young, 1992), restricted to growth-sources studies (RQ4), the domain in which the platform sample had been thinnest relative to the literature. Six candidates were identified and assessed against the same rule. Citation tracking has also been used to supplement database searches in other thematic reviews (R. G. Atento, Quinto, et al., 2026).

First-pass decisions for the re-screen and the citation search were drafted with AI assistance against the written rule, and every decision was then checked by the authors. Decisions and reasons for each record are reported in Supplementary File S4. The re-screen was not a dual independent human screen, and the 205 records scoring between 3.00 and 3.49 were not re-screened; both points are discussed in Section 5.5.

3.7 Data Extraction

Six data fields were extracted for each included study: study design and methods, key mechanisms examined, main findings, growth-sources analysis, policy-transferability assessment, and limitations and critical perspectives. For the platform sample, extraction was LLM-assisted and verified by the authors against the abstract or, where available, the full text. For studies added through the re-screen and citation search, extraction was carried out from the abstract or, for Young (1992), from the full text. Where a source did not report a field, it was recorded as not available rather than inferred. Quantitative estimates are reported only where they appear in a full text or an abstract. The extraction for all included studies is reported in Supplementary File S5.

3.8 Evidence Appraisal and Synthesis

No standard risk-of-bias instrument exists for a body of evidence composed of macroeconomic case studies, growth-accounting comparisons, time-series models, and qualitative policy analysis. Each included study was therefore assigned to one of three evidence tiers according to its design. Tier A studies provide quantitative estimation, such as growth accounting, econometric estimation, efficiency analysis, or a calibrated model. Tier B studies provide systematic qualitative or comparative analysis using primary or documented data, such as programme evaluations, structured comparisons, interview studies, or case studies with stated evidence. Tier C studies provide interpretive policy analysis, literature review, or a secondary summary of others' findings. The tiers describe design strength, not quality of execution, and studies that are not peer-reviewed are identified in Supplementary File S5.

The evidence for each research question was then appraised on four dimensions: the depth of the evidence basis (full text or abstract), the tier composition of contributing studies, the consistency of findings, and the independence of contributing studies, since some studies share authors or data. These dimensions were combined into an overall rating of high, moderate, low, or very low confidence. The rating is an interpretive judgement by the authors and is reported with its basis.

The synthesis is organised by research question. Within each question it distinguishes findings that studies report directly, interpretations that reconcile them, and implications that extend them to other contexts. Causal language is reserved for claims that a study's design can support, and Granger-causality results are described as evidence of temporal precedence rather than causation.

4. Results

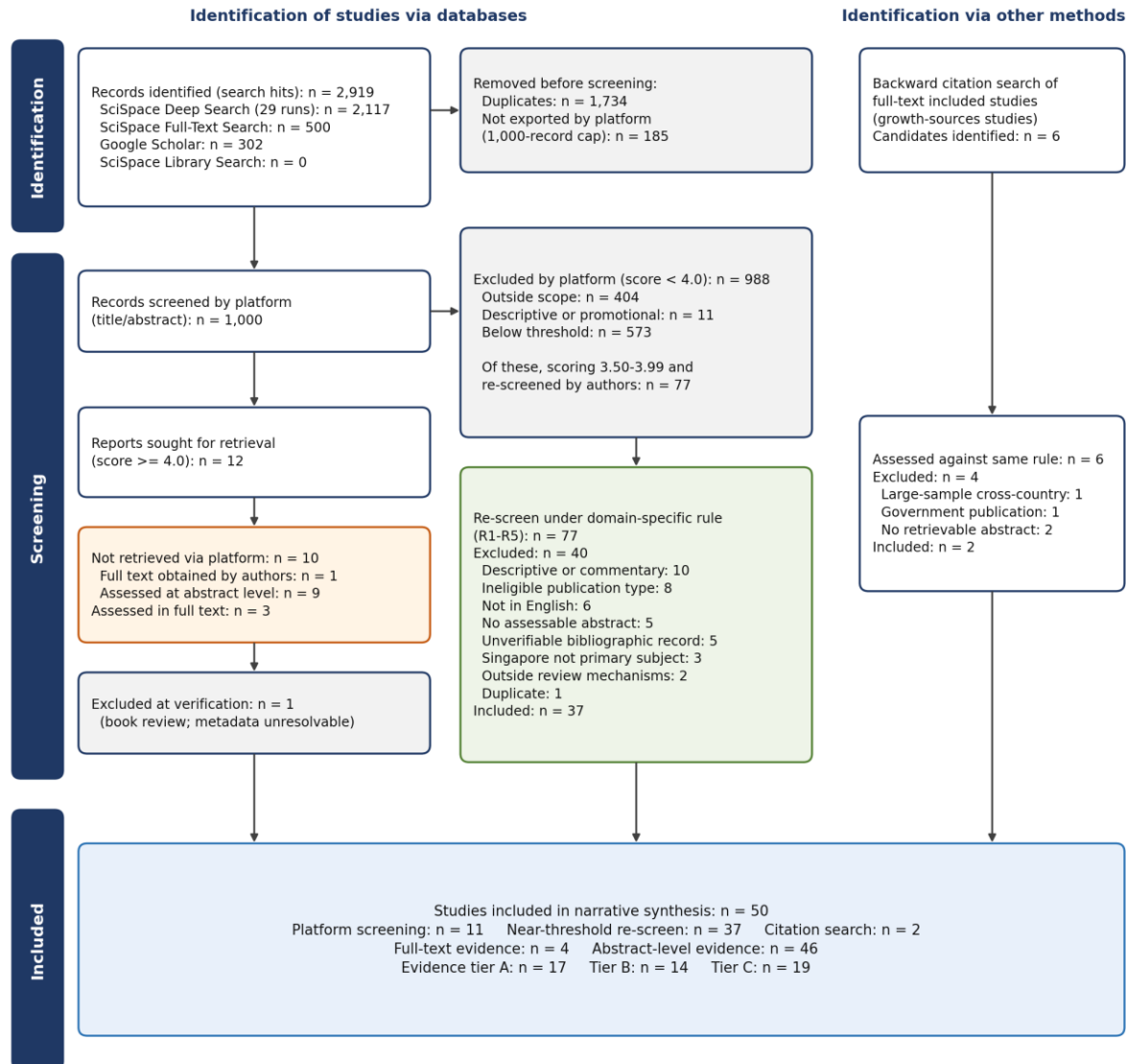
4.1 Study Selection

Figure 1 summarises the selection process. The searches returned 2,919 hits: 2,117 from the 29 SciSpace Deep Search runs, 500 from SciSpace Full-Text Search, 302 from Google Scholar, and none from SciSpace Library Search. De-duplication removed 1,734 duplicate hits, leaving 1,185 unique records, of which the platform exported 1,000 for screening. The median aggregate score was 2.50 (interquartile range 1.56 to 3.06). Twelve records reached the 4.0 threshold; after full-text assessment, retrieval by the authors, and verification, 11 were retained.

Of the 988 records excluded by the platform, 404 were outside the review's scope, 11 were descriptive or promotional, and 573 addressed Singapore's economy but fell below the threshold. The 77 records in the 3.50 to 3.99 band were re-screened under the domain-specific rule (Section 3.6), and 37 were included. The 40 exclusions comprised 10 descriptive overviews or commentaries, 8 ineligible publication types (edited-volume records, teaching cases, a speech, a policy debate stated not to be peer-reviewed, a news feature, and a self-archived report), 6 non-English publications, 5 records that could not be assessed because no abstract reporting findings was available, 5 with unverifiable bibliographic details, 3 in which Singapore was not the primary subject, 2 outside the review's

mechanisms, and 1 duplicate. Backward citation searching identified six growth-accounting candidates, of which two were included (Kim & Lau, 1994; Young, 1995). The excluded four comprised one large-sample cross-country study, one government publication, and two works without retrievable abstracts. The final sample therefore comprises 50 studies: 11 from platform screening, 37 from the re-screen, and 2 from citation searching.

Figure 1. PRISMA 2020 flow diagram of study identification, screening, and inclusion



Note. Search hits are counted across all query runs, including repeated and reformulated queries. De-duplication used normalised titles. Platform exclusion categories are hierarchical and mutually exclusive (Section 3.4). The re-screen and citation search applied the domain-specific rule described in Section 3.6; decisions for every record are reported in Supplementary File S4. Full-text evidence comprises Kasa (1994), Tan and Phang (2005), Cheang (2024), and Young (1992). Source: Authors' reconstruction from the exported search and screening files (October 2026).

4.2 Characteristics of the Evidence Base

The 50 studies were published between 1980 and 2024 and cover periods from the 1960s to 2019 (Appendix B). Thirty-four are journal articles or a full conference paper, eight are working papers or policy letters from research institutions such as the World Bank and the Federal Reserve Bank of San Francisco, four are books, chapters, or

institutional reports, and four are theses. Seventeen studies are in Tier A, 14 in Tier B, and 19 in Tier C. Full texts were available for four studies (Cheang, 2024; Kasa, 1994; Tan & Phang, 2005; Young, 1992); the remaining 46 were extracted at abstract level. Several studies are not independent: Kasa (1994) summarises Young (1992), Ho et al. (2009) and Wong et al. (2023) share authors and data, and Cheang (2023, 2024) are by the same author.

Coverage of the research questions is now broad but uneven in depth (Table 2). Human capital and innovation (RQ3) is the most studied domain, with 26 studies. Growth sources (RQ4) has the strongest designs, with 11 of its 17 studies in Tier A. Transferability (RQ6) remains the weakest, with 15 studies, of which only two are in Tier A.

Table 2. Coverage of research questions by evidence tier (n = 50)

Research question	Studies	Tier A	Tier B	Tier C	Full text
RQ1 State capacity and coordination	19	2	8	9	2
RQ2 Industrial policy, FDI, trade, finance	18	6	5	7	4
RQ3 Human capital and innovation	26	8	9	9	2
RQ4 Sources of growth	17	11	3	3	4
RQ5 Limitations and trade-offs	20	6	7	7	4
RQ6 Transferability	15	2	7	6	2
All included studies	50	17	14	19	4

Note. Studies can address more than one research question, so rows do not sum to the total. Tier A = quantitative estimation; Tier B = systematic qualitative or comparative analysis with primary or documented data; Tier C = interpretive policy analysis, review, or secondary summary. RQ6 counts include studies that address transferability only partially. Source: Authors' compilation (Supplementary File S5).

4.3 RQ1: State Capacity, Institutional Quality, and Policy Coordination

The studies agree that the Singapore state was unusually capable, interventionist, and growth-oriented. Political dominance enabled resource mobilisation for growth and saving (Tan & Bhaskaran, 2015); a government-wide employment goal organised infrastructure, education, taxation, and macroeconomic policy (Edwards, 1992); and statutory boards and ministries implemented successive policy phases within a consistent strategic framework (Soon & Tan, 1993). Huff (1999) argues that the most instructive lessons from Singapore lie in government's central role. Comparative work identifies competent agencies, the quality and timing of interventions, and the exclusion of ethnic criteria from policy as differences between Singapore and Malaysia (Maynes, 2011).

Evaluative studies, however, show that state capacity did not guarantee good outcomes. Tan (1995) finds that interventions building national competitive advantage, such as information and telecommunications infrastructure, R&D subsidies, and manpower development, succeeded, whereas the high-wage policy of the early 1980s failed, and concludes that a strong, non-corrupt, and market-oriented public sector was what kept interventions market-facilitating. The same coordinating capacity has costs. Coordinated targeting created a societal knowledge filter that impedes endogenous entrepreneurship (Audretsch & Fiedler, 2023), and industrial policy encouraged forms of rent-seeking that a culture of state legitimacy made less visible (Cheang, 2023). Cheang (2024) documents the devices that limited the usual failures of industrial policy: time-limited and reviewed programmes, evaluation by autonomous bodies, and consultation with business. Other studies question whether the model remains resilient under globalisation and resource constraints (Lim, 2018; Low, 2001).

The evidence on RQ1 is consistent in direction: state capacity and coordination are associated with the speed and coherence of Singapore's structural change, but the same capacity is associated with costs for local enterprise. Only two of the 19 studies are in Tier A, and none isolates the contribution of state capacity from that of location, timing, or external demand.

4.4 RQ2: Industrial Policy, FDI, Trade, Infrastructure, and Financial Development

FDI-led export industrialisation is the most consistently documented mechanism. Labour-intensive, foreign-owned export manufacturing drove growth in the 1960s and 1970s (Edwards, 1992), and the economy moved through textiles, electronics, and finance faster than Hong Kong (Young, 1992). Young's full text quantifies the scale of the effort. Tax holidays introduced in 1959 attracted little FDI until the state expanded its own financial participation in industry after 1968; net long-term direct investment between 1975 and 1984 then reached US\$11.6 billion, against US\$0.7 billion in the Philippines; and by 1990, 35.9 percent of GDP was paid to resident foreigners and foreign companies. Lall (2000) concludes that Singapore used FDI to promote industrial growth and technological upgrading more effectively than any other developing economy. Industry and capability studies show how: a semiconductor industry was built by leveraging multinationals' skills and technology (Mathews, 1999), domestic social capabilities were continuously upgraded to meet foreign firms' needs (Prime, 2012), and innovation policy harmonised investor requirements with local objectives (Ebner, 2004). Over 1984 to 2003, inward investment from industrialised economies shifted towards skill-seeking activity, and Singapore's skill abundance accounted for about 41 percent of average inbound FDI stocks (Chellaraj et al., 2009).

The re-screened evidence is consistent on a second point: FDI generated limited spillovers to local firms. After the mid-1980s, TFP-led growth was concentrated in foreign companies (Shimada, 1996). The Local Industry Upgrading Programme produced limited supplier upgrading in electronics, although horizontal partnerships in software worked better (Coe & Perry, 2004). In 1990, SMEs accounted for 22 percent of value added and 15 percent of direct exports, far below their shares in Hong Kong, Taiwan, and South Korea (Cheang, 2024). An early critique argued that export-oriented success depended on specific circumstances and carried the costs of dependence on multinationals and imported technology (Cheah, 1980).

Financial development appears mainly as the financing of accumulation. Investment rose from 9 percent of GDP in 1960 to 43 percent in 1984, financed by government surpluses, foreign borrowing, and the Central Provident Fund (CPF), whose contribution rates rose from 5 percent each for employees and employers in 1955 to 25 percent each by 1984 (Kasa, 1994; Young, 1992). Hopf (2004) shows, however, that once demographic structure and external position are controlled for, Singapore's high saving rate was not extraordinary; what stood out was the speed at which saving behaviour was transformed in the first half of the period. On whether targeting raised efficiency, the evidence remains contested. Young (1992) advanced, as a hypothesis, the idea that targeting pushed the economy into industries ahead of its learning maturity, and Tan and Phang (2005) note that Hong Kong achieved comparable productivity growth without state-led frontier investment.

4.5 RQ3: Human Capital, Workforce Development, and Innovation

The evidence on skills is the richest qualitative strand in the review. Singapore's skills system is attributed to the Economic Development Board's linkage of skills to investment, FDI-linked training run jointly by government and firms, a levy-grant Skills Development Fund that induced firms to train, and institutional interconnection across the system (Kuruvilla & Chua, 2000). An evaluation framework applied to the system finds that it moves towards higher-skill equilibria (Kuruvilla et al., 2002). The state's role in skill formation persisted despite heavy reliance on multinationals (Brown & Lauder, 2001), and historical comparison with Japan shows that skill systems are products of state-business-labour interaction rather than of state design alone (Sakamoto, 2006). Econometric evidence indicates higher returns to human capital in Singapore than in Malaysia (Maynes, 2011).

The evidence on innovation shows inputs outpacing outputs. The national innovation system moved from assimilating multinationals' technology towards indigenous R&D and start-ups (Wong, 2001), and the state built research institutions, a life-science cluster, and university reforms to support that shift (Haridas, 2018; Parayil, 2005; Sidhu et al., 2011; Wong, 2006). R&D has a significant long-run association with TFP, but a weaker one than in OECD economies (Ho et al., 2009; Wong et al., 2023), and no structural break in R&D productivity followed major policy changes (Wong et al., 2023). Foreign companies accounted for about 74 percent of private-sector R&D spending and about 80 percent of private-sector patent applications in 2018 (Cheang, 2024), and 7,340 of 7,580 patents filed in 2002 were by non-residents (Tan & Phang, 2005). Carney and Loh (2009), using tests across 23 countries, attribute the innovation gap to conflicting institutional incentives rather than to culture alone. ICT investment contributed about one percentage point a year to GDP growth between 1990 and 2008 (Vu, 2014).

4.6 RQ4: Sources of Growth

Growth-sources evidence is the strongest in the review, and the expanded sample allows a more nuanced conclusion than the platform sample. For the decades to the late 1980s, independent Tier A studies agree that growth was driven by accumulation. Young's (1992) translog accounting attributes about 35 percent of Hong Kong's output growth between 1971 and 1990 to TFP, but –8 percent of Singapore's between 1970 and 1990, with capital accumulation explaining 117 percent of the increase in Singapore's output per worker. Even at the highest depreciation rate that Young considered plausible, Singapore's TFP contribution did not exceed about 4 percent of output growth, and the real return to capital fell from about 40 percent in the late 1960s to just over 10 percent by the late 1980s. Young (1995) finds that, once rising participation, education, and investment are accounted for, the TFP growth of the four newly industrialised economies resembles that of OECD and Latin American economies. Kim and Lau (1994), using a different method, cannot reject the hypothesis of no technical progress in these economies and attribute 48 to 72 percent of their growth to capital accumulation. Across five estimates compiled by Cheang (2024), Singapore's annual TFP growth for 1960 to 1995 ranges from 0.2 to 1.5 percent, below every estimate for Hong Kong. Kasa's (1994) summary of Young (1992), verified against the full text, is consistent with these figures, although its statement that productivity contributed over half of Hong Kong's growth refers to output per worker rather than total output.

The expanded sample also shows that this conclusion depends on measurement. Fernald and Neiman (2006) find that the gap between primal estimates, which use input and output quantities, and dual estimates, which use factor prices, is larger in Singapore than in any other newly industrialised economy. They attribute the gap to market imperfections, including economic profits and government-directed credit, which created a two-sector economy with a favoured sector, and they derive corrected measures of technology growth. The accumulation finding therefore holds for conventional primal estimates, but the size of Singapore's productivity shortfall is sensitive to how imperfections are treated.

For the later period, the evidence is mixed. Service-industry TFP growth was weak and cyclical between 1976 and 1993 but higher after the 1985 recession (Tan & Virabhak, 1998), and TFP-led growth after the mid-1980s came mainly from foreign firms (Shimada, 1996). In manufacturing between 2001 and 2010, TFP growth came from efficiency change with no technical progress, and heavy use of foreign workers lowered efficiency (Lee, 2012). The rise in the productivity share of growth in 1998 to 2003 reported by Tan and Phang (2005) refers to labour productivity rather than TFP and falls in a period of weak employment growth. Successive productivity plans missed their targets, and growth in value added per hour averaged 0.8 percent a year between 2001 and 2009, against 3.3 percent in Hong Kong (Cheang, 2024).

4.7 RQ5: Competing Explanations, Limitations, and Trade-offs

Five clusters of limitations recur. The first is dependence on foreign labour. Pang and Lim (2015) associate it with weak productivity growth, Lee (2012) finds that it lowered manufacturing efficiency, and Wang (2024) finds that immigration supports growth but strains social cohesion. A general-equilibrium model suggests that balancing skilled and unskilled inflows with indigenous innovation capability is essential for sustainable growth (Thangavelu, 2017). The second is weak local entrepreneurship and innovation, documented through crowding-out of SMEs, a societal knowledge filter, and rent-seeking (Audretsch & Fiedler, 2023; Cheang, 2023, 2024), and through institutional disincentives to innovate (Carney & Loh, 2009). In a 2019 survey of young people in six ASEAN economies, Singapore had the lowest share wishing to become entrepreneurs (Cheang, 2024).

The third cluster concerns distribution and welfare. High growth was not accompanied by a less skewed income distribution (Tan & Bhaskaran, 2015), consumption grew at about half the rate of output (Kasa, 1994), state-supported workplace ICT investment was associated with slower wage growth for low-wage workers (Loh & Chib, 2016), and higher-education reforms created tensions between equity and meritocracy (Sidhu et al., 2011). The fourth is limited spillovers from FDI (Section 4.4). The fifth is the narrowing of the model's room for manoeuvre under external competition and domestic resource constraints (Lim, 2018; Low, 2001).

On competing explanations, the Hong Kong comparison shows that two similar city economies grew rapidly through different policy regimes and growth sources (Kasa, 1994; Young, 1992), but it remains a comparison of two cases. No included study uses synthetic control or a structured comparison across many economies. Cheang (2024) treats intervention in Hong Kong as non-existent, a contrast that Young's (1992) documentation of Hong Kong's public housing and industrial-estate programmes qualifies.

4.8 RQ6: Policy Transferability

Transferability is still the least developed strand, but the expanded sample gives it more structure. The skills system is assessed directly: it is judged successful, but its long-term sustainability and transferability are questioned, and the authors offer general principles rather than a model to copy (Kuruvilla et al., 2002). Replicating Singapore's semiconductor strategy would require an institutional framework able to direct technology leverage and diffusion (Mathews, 1999). Comparison with Finland and Sweden identifies common determinants, including large investment in physical and human capital and crises that forced reform, alongside crucial country-specific features (Blomström et al., 2002), and a World Bank comparison of small economies notes that attempts to emulate East Asian benchmarks have generally produced only transient growth accelerations (Yusuf & Nabeshima, 2012).

Two studies argue for more transferability than the rest. Hopf (2004) concludes that the saving aspects of Singapore's experience are transferable once demographic structure and external position are taken into account, and Toh (2013) argues that Singapore's experience obeys standard economic logic and can serve as a reference for other economies. Prime (2012) shows that a small economy can upgrade through FDI if it invests continuously in skills, institutions, and infrastructure. Maynes (2011) derives the most specific recommendations: link education policy to economic policy, allocate education resources according to the stage of development, and exclude non-economic criteria from education policy. Historical analysis cautions that skill systems reflect each country's balance of state, business, and labour (Sakamoto, 2006).

4.9 Summary of Evidence Strength and Sensitivity of Conclusions

Table 3 summarises the appraisal. Confidence is high for the direction of the growth-sources finding up to the late 1980s under conventional measurement, which is supported by several independent Tier A studies, and moderate once the primal–dual dispute is taken into account. Confidence is moderate to high for FDI-led structural change (RQ2), and moderate for limited spillovers from FDI, for innovation inputs outpacing outputs (RQ3), and for the identified limitations (RQ5). It is low to moderate for the role of state capacity (RQ1) and low for transferability (RQ6).

Table 3. Appraisal of evidence strength by research question

Research question	Studies (A/B/C; full text)	Strongest designs contributing	Consistency	Confidence	Principal finding
RQ1 State capacity and coordination	19 (2/8/9; 2)	Programme and policy evaluations; one econometric comparison	Consistent in direction; evaluations of costs diverge	Low to moderate	A capable, coordinating state is associated with the speed of structural change, but its interventions were not uniformly successful and carried costs for local enterprise.
RQ2 Industrial policy, FDI, trade, finance	18 (6/5/7; 4)	Growth accounting; export-structure and FDI models; programme evaluation	Consistent	Moderate to high (structural change); moderate (spillovers)	FDI-led export industrialisation drove rapid structural change; spillovers to local firms were limited; accumulation was financed by compulsory saving, surpluses, and borrowing.

Research question	Studies (A/B/C; full text)	Strongest designs contributing	Consistency	Confidence	Principal finding
RQ3 Human capital and innovation	26 (8/9/9; 2)	Econometric and time-series studies; system evaluations	Consistent	Moderate	Skills policy was tightly linked to investment; innovation inputs, largely foreign-owned, grew faster than measurable returns.
RQ4 Sources of growth	17 (11/3/3; 4)	Independent growth-accounting and meta-production-function studies; efficiency analysis	Consistent in direction under primal measurement; primal–dual estimates diverge	High (direction, to late 1980s, primal); moderate overall	Growth to the late 1980s was predominantly accumulation-driven; the size of the productivity shortfall depends on measurement; later evidence is mixed.
RQ5 Limitations and trade-offs	20 (6/7/7; 4)	Firm-level analysis; equilibrium model; case studies	Consistent	Moderate	Dependence on foreign labour, weak local entrepreneurship and innovation, distributional costs, and limited FDI spillovers.
RQ6 Transferability	15 (2/7/6; 2)	System evaluation; structured comparisons; saving benchmarking	Mixed	Low	Coordination capabilities and some saving arrangements appear transferable with adaptation; most instruments depend on Singapore-specific conditions.

Note. A/B/C give the number of contributing studies in each evidence tier. Confidence ratings combine evidence depth, tier composition, consistency, and independence (Section 3.8) and represent the authors' interpretive judgement. Source: Authors' appraisal.

The re-screen did not reverse any of the platform sample's conclusions. Its effects were to raise confidence for four of the six questions (RQ1, RQ2, RQ3, and RQ6), to add one substantive finding that the platform sample could not support (limited spillovers from FDI to local firms), and to qualify the growth-sources finding (RQ4) by revealing a measurement dispute that the platform sample had missed. The direction of the evidence is therefore robust to the screening rule, but its depth was not.

5. Discussion

5.1 Reconciling the Accumulation and Coordination Narratives

The accumulation and developmental-state narratives are often presented as rivals, but the evidence synthesised here suggests that they describe the same process from different vantage points. The growth-accounting evidence

shows what grew: capital, labour, and skills, at rates that few economies have matched (Kasa, 1994; Pang & Lim, 2015). The institutional evidence shows how that growth was organised: a politically dominant and administratively capable state mobilised domestic savings, attracted foreign capital and labour, and aligned education with the skill demands of incoming investors (Edwards, 1992; Maynes, 2011; Tan & Bhaskaran, 2015). On this reading, the state's distinctive contribution was to raise the rate of accumulation and to direct it quickly into new sectors, not necessarily to raise the efficiency with which inputs were used. The two accounts become incompatible only if state capacity is assumed to work primarily through productivity, an assumption the included evidence does not support for the period before the 1990s.

This reconciliation has a direct analytical implication for financial economists. Accumulation on Singapore's scale required a financing architecture capable of sustaining investment above 40 percent of GDP, which was achieved through compulsory saving, foreign borrowing, and current account deficits that at times reached a fifth of GDP (Kasa, 1994). The welfare corollary is the gap between consumption and output growth. Young (1992) shows how large this architecture was. Contribution rates to the Central Provident Fund rose from 5 percent each for employees and employers in 1955 to 25 percent each by 1984; at their 1985 peak, contributions equalled 14.9 percent of GNP and 36 percent of gross national savings, and in 1980 some 95 percent of the fund was invested in government securities. By 1990, 35.9 percent of Singapore's GDP was paid to resident foreigners and foreign companies, which means that GDP growth overstates the growth of income accruing to Singaporeans. Hopf (2004) adds an important qualification: once demographic structure and external position are controlled for, Singapore's saving rate was not exceptional, and what distinguished it was how quickly saving behaviour was transformed after independence. The financial lesson is therefore less about the level of compulsory saving than about the speed with which institutions such as the CPF mobilised domestic resources. Policy discussions that cite Singapore's growth without its saving, consumption, and factor-income profile omit the trade-offs on which that growth rested.

The reconciliation also clarifies the later period. Once accumulation reached diminishing returns, the state applied the same coordinating capacity to innovation inputs, and the evidence indicates that input expansion has again outpaced measurable efficiency returns (Tan & Phang, 2005; Wong et al., 2023). Fernald and Neiman (2006) add a further qualification: if part of measured inefficiency reflects the preferential treatment of a favoured sector, the productivity shortfall is partly an artefact of how imperfect markets are measured. Whether the later pattern reflects a lag between investment and returns, the structural limits of a small economy that depends on multinational firms for frontier activity, or the limits of a state-led approach to discovery (Cheang, 2024) cannot be determined from the present evidence. Each of these interpretations is consistent with the included studies, and distinguishing among them is a priority for future research.

5.2 What Transfers: Capabilities, Instruments, and Preconditions

The distinction between institutional capabilities and policy instruments introduced in Section 2.3 helps organise the transferability evidence. Table 4 presents an interpretive appraisal of the main mechanisms identified in the review. It is the authors' synthesis of the evidence rather than a finding of any single study, and its ratings indicate the plausibility of adaptation, not predicted effectiveness.

Table 4. Interpretive appraisal of mechanism transferability to developing ASEAN economies

Mechanism	Evidence in review	Preconditions documented or implied	Appraisal for adaptation
Coordination of education and training with industrial strategy	Maynes (2011); Kuruvilla & Chua (2000); Kuruvilla et al. (2002); Edwards (1992)	Inter-agency coordination; employer engagement; competitive teacher pay; language of instruction aligned with investors	Higher: a capability rather than an instrument; levy-grant training finance is adaptable at larger scale
Investor-oriented business environment to attract FDI	Lall (2000); Mathews (1999); Prime (2012); Coe & Perry (2004); Young (1992)	Infrastructure; regulatory efficiency; political stability; internationally mobile manufacturing	Moderate: feasible, but spillovers were limited even in Singapore; pair with domestic capability building

Mechanism	Evidence in review	Preconditions documented or implied	Appraisal for adaptation
Policy consistency and administrative capacity	Tan (1995); Tan & Bhaskaran (2015); Soon & Tan (1993); Maynes (2011)	Political continuity; competent agencies; exclusion of non-economic criteria from policy design	Moderate: desirable but slow to build and dependent on the political settlement
Sectoral industrial targeting	Young (1992); Tan & Phang (2005); Audretsch & Fiedler (2023); Cheang (2024)	Technical capacity to select sectors; insulation from capture; tolerance of failure	Low to moderate: effects on productivity contested even in Singapore
Compulsory saving and external borrowing to finance investment	Young (1992); Kasa (1994); Hopf (2004)	Administrative reach over a formal workforce; external creditworthiness; tolerance of consumption well below output growth	Low to moderate: the saving outcome may be reproducible where demography and external position allow (Hopf, 2004), but the instrument depends on formal-sector coverage
Selective immigration of skilled and unskilled labour	Thangavelu (2017); Lee (2012); Pang & Lim (2015); Wang (2024)	Labour scarcity; integration capacity; management of social-cohesion pressures	Low: relevant mainly to labour-scarce economies
Frontier R&D and innovation infrastructure	Ho et al. (2009); Wong et al. (2023); Carney & Loh (2009); Tan & Phang (2005)	Absorptive capacity of local firms; research base; critical mass of researchers	Low: returns uncertain even in Singapore; premised on capabilities most borrowers lack

Note. Appraisals indicate the plausibility of adaptation given the documented preconditions, not predicted effectiveness. They are the authors' synthesis and are not findings of any single included study. Source: Authors' interpretation of the evidence in Section 4.

Three patterns emerge. First, the mechanism with the strongest and most directly comparative support, the coordination of education and training with industrial strategy, is a capability rather than an instrument, and it has both econometric support (Maynes, 2011) and direct evaluations of Singapore's skills system that offer transferable principles (Kuruvilla & Chua, 2000; Kuruvilla et al., 2002). Second, the instruments most closely associated with Singapore's accumulation phase, namely compulsory provident saving and aggressive sectoral targeting, depended on preconditions such as administrative reach, political continuity, and favourable external conditions. Hopf's (2004) evidence that Singapore's saving was unexceptional once demography and external position are controlled for suggests that the saving outcome may be more reproducible than the instrument that produced it, provided those conditions are present. Third, the frontier-innovation strategy of the post-1990s period is the least suitable for direct emulation by middle-income economies, both because its returns in Singapore remain uncertain (Wong et al., 2023) and because the absorptive capacity it presupposes is precisely what most borrowing economies lack.

5.3 Implications for the Philippines and a Differentiated ASEAN

ASEAN economies differ too much for a single set of lessons. The included evidence speaks most directly to Malaysia, through the comparative findings of Maynes (2011). Those findings suggest that the divergence in returns to education between the two economies was associated less with spending levels than with how education policy was linked to industrial demand, with the language of instruction, and with whether non-economic criteria entered policy design. For Malaysia, the implication is that further education investment is likely to yield more when it is tied to industrial upgrading than when it is pursued as a separate goal.

For the Philippines, the evidence supports cautious and selective adaptation. The capability with the strongest support, coordination between education, training, and investment promotion, does not depend on Singapore's scale, and the Philippines already shares one of the enabling conditions that Maynes (2011) identifies, English-medium instruction. By contrast, mechanisms that depended on political dominance, small size, and administrative reach, such as economy-wide indicative planning and compulsory saving at Singaporean rates, are poorly matched to an archipelagic economy with decentralised governance and wide governance gaps relative to Singapore (Quah, 2010). The Singapore evidence on FDI-led industrialisation is also a caution. Singapore's experience suggests that FDI can drive rapid structural change while leaving domestic enterprise and indigenous innovation weak (Cheang, 2024; Tan & Bhaskaran, 2015). An FDI strategy that also aims to build local supplier and firm capabilities is therefore more consistent with the evidence than one that pursues investment volumes alone, although Singapore's own linkage programme shows that supplier upgrading is difficult to engineer and that horizontal partnerships may work better than vertical supplier schemes (Coe & Perry, 2004). Singapore's levy-grant Skills Development Fund, which induced firms to finance training (Kuruvilla & Chua, 2000), is a more modest instrument that does not depend on Singapore's scale and may be easier to adapt. Two further pieces of evidence bear directly on the Philippine case. Young (1992) reports that net long-term direct investment between 1975 and 1984 was about US\$11.6 billion in Singapore but only US\$0.7 billion in the Philippines, and that Singapore's own tax holidays, introduced in 1959, attracted little FDI until the state expanded its direct financial participation in industry after 1968; incentives alone, in other words, were not sufficient even in Singapore. The youth survey reported by Cheang (2024) placed the Philippines (18.7 percent) only slightly above Singapore and below Indonesia, Thailand, Vietnam, and Malaysia in the share of young people wishing to become entrepreneurs, which suggests that weak entrepreneurial aspiration is not a problem confined to state-led economies. These are implications of the review, not findings tested on Philippine data.

For economies such as Vietnam and Thailand, the review's evidence base contains no direct comparisons, and conclusions should not be extrapolated from the Singapore–Malaysia case. The background literature on South–South policy transfer suggests that Singaporean programmes have influenced public officials in Cambodia and Thailand mainly when participants adapted ideas to local structures rather than adopting models wholesale (Lee et al., 2025), which reinforces the capability-over-instrument reading of the evidence.

5.4 Methodological Implications for AI-Assisted Reviews

The screening results carry a lesson that extends beyond Singapore. The platform's additive scoring rule rewarded breadth across the six inclusion domains rather than depth in any one. Under it, studies widely regarded as foundational, including Young's (1992) growth-accounting comparison and Huff's (1999) assessment of Singapore's lessons, fell below the 4.0 threshold, while a study rated by the platform as only partially relevant (Wang, 2024) passed at exactly 4.0 because it touched several criteria. The sensitivity re-screen shows how large this effect was: almost half of the records in the 0.5-point band below the threshold (37 of 77) met a domain-specific rule, and they include most of the review's Tier A evidence. Two consequences follow for AI-assisted reviews. First, threshold-based multi-criteria scoring should not be the sole inclusion rule when review questions span distinct domains; a domain-specific rule, in which a study qualifies by meeting the core focus criterion and one domain criterion substantively, is better suited to such questions. Second, criterion-level ratings should be exported and reported, as they are here, because they allow the screening tool's behaviour to be audited and its errors corrected.

Table 5. Status of selected seminal studies after the sensitivity re-screen

Study	Platform score	Status after re-screen	Role in the debate
Huff (1999)	3.94	Included (re-screen)	Lessons from the state's central role; doubts arising from low TFP growth
Huff (1995)	3.63	Excluded: no abstract available to assess	Developmental-state account of growth since 1960
Young (1992)	3.62	Included (re-screen; full text)	Primary growth-accounting comparison of Hong Kong and Singapore
Pereira (2008)	3.44	Below re-screen band; not assessed	Explanation of the developmental state's persistence

Study	Platform score	Status after re-screen	Role in the debate
Young (1995)	3.25	Included (citation search)	Four-economy growth accounting of the East Asian NIEs
Kim & Lau (1994)	Not in export	Included (citation search)	Meta-production-function evidence of no technical progress in the NIEs
Abeyasinghe (2015)	2.88	Below re-screen band; not assessed	Lessons for developing economies
Quah (2013)	2.69	Below re-screen band; not assessed	Governance reforms and limits of transfer
Krugman (1994)	1.75	Below re-screen band; not assessed	Accumulation thesis for a policy audience

Note. Scores are aggregate platform screening scores. Studies below the 3.50–3.99 band are cited in Section 2 for framing only. Source: Authors' analysis of the screening file and Supplementary File S4.

5.5 What the Review Can and Cannot Conclude

The review can conclude that the included literature consistently associates Singapore's transformation with a combination of state coordination, FDI-led export industrialisation, high rates of saving and investment, and education aligned with industrial demand, and that the best quantitative evidence available to it characterises growth up to the late 1980s as accumulation-driven under conventional measurement. It can also conclude that the literature documents significant limitations and trade-offs, and that evidence on transferability is weak.

The review cannot establish the causal contribution of any single mechanism, because no included study uses a design capable of separating policy effects from those of location, timing, and global demand. It cannot determine whether the post-1990s innovation strategy has raised productivity growth, because the available evidence is short-run, partly preliminary, and in one case explicitly negative on policy-induced change. It cannot rank mechanisms by importance.

Several limitations qualify the review's conclusions. Only four of the 50 included studies were assessed in full text, so most findings rest on abstracts, including those of important studies such as Maynes (2011), Hopf (2004), and Wong et al. (2023). The sensitivity re-screen was restricted to the 0.5-point band below the threshold; the 205 records scoring between 3.00 and 3.49 were not re-screened and may contain further eligible studies. First-pass re-screen decisions were drafted with AI assistance and checked by the authors, rather than made by two independent human screeners. The platform did not pass 185 unique records to screening, and the rule by which records were selected is undocumented. The protocol was amended during the review to admit theses, and one record was excluded at verification. Many reference records for studies added by the re-screen carried incomplete bibliographic metadata, which were completed from publisher and repository records where possible. The search was restricted to English and did not include Scopus, Web of Science, EconLit, or the working-paper series of regional institutions. Finally, most included studies concern the period before 2010, so recent developments are under-represented.

6. Conclusions and Recommendations

6.1 Conclusions

This review set out to determine what the research literature establishes about the mechanisms of Singapore's economic transformation and their transferability. Its principal conclusion is that the evidence supports a periodised and institutional account. Through the 1980s, Singapore grew mainly by accumulating capital, labour, and skills at exceptional rates, and its state was distinctive chiefly in its capacity to mobilise and direct that accumulation. How large Singapore's productivity shortfall was depends on how market imperfections are measured. Since the 1990s, the same capacity has been applied to innovation inputs, with results that remain uncertain on the evidence available. The literature also documents real costs, including dependence on foreign inputs, limited spillovers from FDI to local firms, constrained domestic entrepreneurship, thin indigenous innovation, and a consumption profile weaker than headline growth. A sensitivity re-screen that expanded the evidence base from 11 to 50 studies left these conclusions

unchanged in direction while strengthening most of them. The evidence on transferability is the weakest part of the literature, and it points towards the portability of coordination capabilities rather than of specific instruments.

6.2 Recommendations for Policy

The recommendations below follow from the synthesis and are stated at the level of confidence the evidence allows. Policymakers in developing ASEAN economies, including the Philippines, should treat Singapore primarily as a source of institutional principles rather than a template of instruments. Where they draw on Singapore's experience, the strongest case is for building durable coordination between education and training systems, industrial and investment-promotion agencies, and employers, because this is the mechanism with the most direct comparative support. FDI promotion should be paired with explicit measures to develop domestic suppliers and firm capabilities, given the evidence that FDI-led growth in Singapore coexisted with weak local entrepreneurship. Proposals to adopt Singapore-style compulsory saving or frontier-research targeting should be assessed against their documented preconditions, including administrative reach, political continuity, absorptive capacity, and external financing conditions, before they are adopted. Finally, policy communications that cite Singapore's growth should also report the saving, consumption, and distributional trade-offs that accompanied it.

6.3 Recommendations for Research

Four lines of research would most improve the evidence base. First, the review itself should be extended: by re-screening the 205 records in the 3.00 to 3.49 band, searching Scopus, Web of Science, EconLit, and regional working-paper series, obtaining full texts for the abstract-level studies, and using dual independent human screening. The primal–dual dispute over Singapore's growth accounting (Fernald & Neiman, 2006) deserves particular attention. Second, quasi-experimental and structured comparative designs, such as synthetic control methods with a larger donor pool of small open economies, are needed to move beyond two-economy comparisons. Third, the financial architecture of accumulation, including provident-fund saving, foreign borrowing, and the consumption–output gap, deserves systematic treatment from a financial-economics perspective. Fourth, comparative studies of the Philippines and other ASEAN economies using harmonised indicators would allow transferability claims to be tested rather than asserted.

6.4 Concluding Remark

Singapore's experience remains one of the most instructive cases in Asian development, but it instructs most when it is read accurately. The evidence reviewed here indicates that what made Singapore distinctive was the coordinated mobilisation of resources under specific historical and political conditions, at a cost that its own scholars have documented. For developing ASEAN economies, the more useful lesson is the institutional capacity to coordinate investment, skills, and industry consistently over time, adapted to each economy's scale and political structure.

Declarations

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Conflicts of Interest

Ramon George Atento is the founder and chief executive officer of SLSI Press, the publisher of Asian Financial Economics and Policy. In line with the Committee on Publication Ethics (COPE) guidance on submissions from editors and publishers, editorial handling of this manuscript, including reviewer selection, management of peer review, and the publication decision, is assigned to an editor independent of the corresponding author, and the corresponding author has no access to the review process or the confidential records of the submission. The remaining authors declare no conflicts of interest.

Data Availability

Supplementary File S1 contains the Python script used to reconstruct the PRISMA counts and the hierarchical exclusion categories from the exported search and screening files. Supplementary File S2 reports the script's output. Supplementary File S3 lists all 1,000 screened records with their aggregate scores, criterion-level ratings, screening decisions, and exclusion categories, which allows readers to identify the near-threshold records discussed in Sections 3.6 and 5.4. Supplementary File S4 reports the decision and reason for each of the 77 re-screened records and the six

citation-search candidates. Supplementary File S5 lists the 50 included studies with their route of inclusion, evidence tier, design, research questions, evidence basis, principal finding, and any bibliographic details still to be verified. The original platform exports, including the full-text extraction file, are available from the corresponding author on reasonable request.

Use of Artificial Intelligence Tools

Searching, title and abstract screening, and first-pass data extraction were performed with the LLM-assisted functions of the SciSpace platform, as described in Section 3. First-pass decisions for the sensitivity re-screen and citation search, and first-pass extraction for the added studies, were drafted with generative AI assistance against a written rule and checked by the authors. All screening outcomes for included records, extracted data, bibliographic details, and interpretations were verified by the authors, who take full responsibility for the content of the article.

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Appendix A. Search Strategy

Table A1. Search queries by platform

Platform	Query	Query text
SciSpace (Deep, Full-Text, Library)	Q1	What evidence connects Singapore's economic transformation with state capacity, institutional quality, policy coordination, and implementation since 1965?
	Q2	What roles have industrial policy, foreign direct investment, trade integration, infrastructure, and financial development played in Singapore's economic transformation and growth?
	Q3	How have education, workforce development, technological upgrading, and innovation contributed to Singapore's economic development and productivity growth?
	Q4	How does the literature distinguish growth from capital and labor accumulation versus productivity improvements in Singapore's economic development?
	Q5	What competing explanations, limitations, distributional outcomes, and trade-offs does the literature identify regarding Singapore's development model and policy transferability?
Google Scholar	Q1	(Singapore) AND ("economic transformation" OR "economic development" OR "economic growth") AND ("state capacity" OR "institutional quality" OR "policy coordination" OR "governance") AND (1965 OR "post-independence")
	Q2	(Singapore) AND ("industrial policy" OR "foreign direct investment" OR FDI OR "trade integration" OR "infrastructure development" OR "financial development") AND ("economic transformation" OR "economic growth")
	Q3	(Singapore) AND (education OR "workforce development" OR "human capital" OR "technological upgrading" OR innovation OR "skills development") AND ("economic development" OR productivity OR growth)
	Q4	(Singapore) AND ("total factor productivity" OR TFP OR "capital accumulation" OR "labor accumulation" OR "productivity growth" OR "growth accounting") AND ("economic growth" OR development)
	Q5	(Singapore) AND ("development model" OR "policy transferability" OR "distributional outcomes" OR "trade-offs" OR "development constraints" OR "institutional conditions") AND ("economic development" OR "policy lessons")

Note. SciSpace Deep Search was executed 29 times, including repeated runs of these queries and reformulations adding comparative, mechanism, or spillover terms (for example, comparisons with ASEAN peers and small open economies, and growth-accounting method terms). Source: Search query log (October 2026).

Appendix B. Included Studies

Table B1. Included studies (n = 50), in chronological order

Study	Tier	Route	Design	RQs	Evidence basis
Cheah (1980)	C	Re-screen	Critical political-economy analysis	RQ2, RQ5	Abstract
Edwards (1992)	C	Platform	Comparative review of development strategy	RQ1, RQ2, RQ3, RQ6	Abstract
Young (1992)	A	Re-screen	Translog growth accounting, Hong Kong and Singapore	RQ2, RQ4, RQ5	Full text
Soon & Tan (1993)	C	Re-screen	Policy review (World Bank Lessons of East Asia series)	RQ1, RQ2	Abstract
Kasa (1994)	C	Platform	Secondary summary of growth-accounting evidence (Hong Kong comparison)	RQ2, RQ4, RQ5, RQ6 (partial)	Full text
Kim & Lau (1994)	A	Citation	Meta-production function, four NICs and G5	RQ4	Abstract*
Tan (1995)	B	Re-screen	Analytical review with case studies of interventions	RQ1, RQ2, RQ5	Abstract
Young (1995)	A	Citation	Growth accounting, four NICs	RQ4	Abstract
Shimada (1996)	A	Re-screen	Growth accounting by ownership of capital	RQ2, RQ4	Abstract
Tan & Virabhak (1998)	A	Re-screen	Industry-level TFP growth estimation, services	RQ1, RQ4	Abstract
Huff (1999)	B	Re-screen	Analytical assessment using macro data	RQ1, RQ4, RQ6	Abstract
Mathews (1999)	B	Re-screen	Industry case study (semiconductors)	RQ2, RQ3, RQ6	Abstract
Kuruvilla & Chua (2000)	B	Re-screen	Case study of skills development system	RQ1, RQ3	Abstract
Lall (2000)	A	Re-screen	Export-structure and cluster analysis, Asian and Latin American economies	RQ2, RQ3	Abstract
Brown & Lauder (2001)	C	Re-screen	Policy analysis of skill formation	RQ1, RQ3	Abstract
Low (2001)	C	Re-screen	Political-economy analysis	RQ1, RQ5	Abstract
Wong (2001)	C	Re-screen	National innovation system framework applied to Singapore	RQ3	Abstract
Blomström et al. (2002)	B	Re-screen	Comparative analysis: Finland, Sweden, Singapore	RQ3, RQ6	Abstract
Kuruvilla et al. (2002)	B	Re-screen	Evaluation framework applied to national skills system	RQ3, RQ6	Abstract*

Study	Tier	Route	Design	RQs	Evidence basis
Coe & Perry (2004)	B	Re-screen	Programme evaluation through sector case studies	RQ2, RQ5	Abstract
Ebner (2004)	C	Re-screen	Policy analysis of innovation and locational competitiveness	RQ2, RQ3	Abstract
Hopf (2004)	A	Re-screen	Econometric benchmarking of saving (doctoral thesis)	RQ2, RQ4, RQ6	Abstract
Koh & Wong (2005)	C	Platform	Technology-policy analysis	RQ1, RQ3	Abstract*
Parayil (2005)	C	Re-screen	Analysis of innovation trajectories	RQ3	Abstract
Tan & Phang (2005)	B	Platform	Qualitative policy analysis with interviews and productivity decomposition	RQ1, RQ2, RQ3, RQ4, RQ5	Full text
Fernald & Neiman (2006)	A	Re-screen	Growth accounting with market imperfections (primal vs dual)	RQ4	Abstract
Koh (2006)	C	Platform	Institutional and policy analysis	RQ1, RQ3	Abstract
Sakamoto (2006)	B	Re-screen	Historical comparative analysis, Japan and Singapore (doctoral thesis)	RQ1, RQ3, RQ6	Abstract
Wong (2006)	C	Re-screen	Policy review (triple-helix framework), life sciences	RQ3, RQ6	Abstract
Carney & Loh (2009)	A	Re-screen	Institutional analysis with 23-country statistical tests	RQ3, RQ5	Abstract
Chellaraj et al. (2009)	A	Re-screen	Knowledge-capital model of FDI, 1984-2003	RQ2, RQ3	Abstract
Ho et al. (2009)	A	Re-screen	Time-series production function	RQ3, RQ4	Abstract
Maynes (2011)	A	Platform	Econometric comparison (SUR, SUTSE), Singapore and Malaysia	RQ1, RQ2, RQ3, RQ6	Abstract
Sidhu et al. (2011)	C	Re-screen	Policy analysis of higher-education initiatives	RQ3, RQ5	Abstract
Lee (2012)	A	Re-screen	DEA-Malmquist and bootstrapped truncated regression, manufacturing 2001-10	RQ4, RQ5	Abstract
Prime (2012)	C	Re-screen	Capabilities-based case analysis	RQ2, RQ6	Abstract
Yusuf & Nabeshima (2012)	C	Re-screen	Comparative study of three small economies (World Bank)	RQ6	Abstract
Toh (2013)	C	Re-screen	Analytical review of macro indicators	RQ4, RQ6	Abstract
Vu (2014)	A	Re-screen	Growth accounting of ICT, 1990-2008	RQ3, RQ4	Abstract

Study	Tier	Route	Design	RQs	Evidence basis
Pang & Lim (2015)	C	Platform	Literature review	RQ1, RQ2, RQ4, RQ5	Abstract
Tan & Bhaskaran (2015)	C	Platform	Political-economy analysis	RQ1, RQ5	Abstract
Loh & Chib (2016)	A	Re-screen	Firm-level analysis (n = 632)	RQ5	Abstract
Thangavelu (2017)	A	Re-screen	General equilibrium model of foreign labour	RQ3, RQ5	Abstract
Haridas (2018)	B	Re-screen	Interview-based study of universities in the innovation system (doctoral thesis)	RQ3	Abstract
Lim (2018)	C	Re-screen	Collected analytical essays	RQ1, RQ5	Abstract
Audretsch & Fiedler (2023)	B	Re-screen	Case analysis	RQ1, RQ5	Abstract
Cheang (2023)	B	Re-screen	Case study	RQ1, RQ5	Abstract
Wong et al. (2023)	A	Platform	Time-series production function; structural-break and Granger tests	RQ3, RQ4, RQ5	Abstract
Cheang (2024)	B	Platform	Case study with Penn World Table, patent, survey and SME data	RQ1, RQ2, RQ3, RQ4, RQ5, RQ6 (partial)	Full text
Wang (2024)	B	Platform	Process tracing of immigration policy	RQ3, RQ5, RQ6	Abstract

Note. Route: Platform = platform screening (score 4.0 or above); Re-screen = domain-specific re-screen of records scoring 3.50–3.99; Citation = backward citation search. * Abstract retrieved by the authors from the publisher or a repository. Extraction and findings for each study are reported in Supplementary File S5. Source: Authors' compilation.